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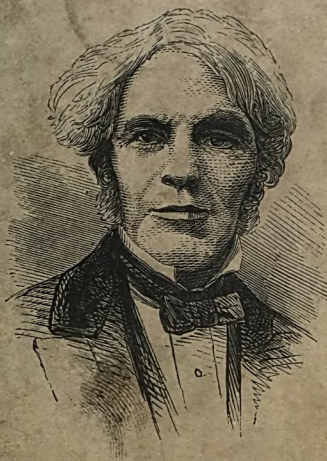
MICHAEL FARADAY:

PHILOSOPHER AND CHRISTIAN.

A Lecture,

BY

THE REV. SAMUEL MARTIN,
OF WESTMINSTER.



LONDON:
JOHN CAMDEN HOTTEN, PICCADILLY.

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1867.



“ Such lives are precious, not so much for all
Of wider insight won where they have striven,
As for the still small voice with which they call
Along the beamy way from earth to heaven.”

MICHAEL FARADAY,

PHILOSOPHER AND CHRISTIAN.

THE life which we are about to consider, was a translation into action of the Divine precept written in Proverbs xxiii. 23, "Buy the Truth, and sell it not—wisdom and instruction and understanding."

Newspapers of all shades of politics, and serials of every class, have recently, with more or less of comment, announced the death, at Hampton Court Green, of Michael Faraday. No member of the Royal Institution of Great Britain, no fellow of the Royal Society, no associate of any scientific or learned society or academy in Europe and in the United States

of America, may I not say in the world, will inquire who is Michael Faraday? No reader of scientific literature, no disciple, however humble, of natural science, no inventor or maker of philosophical apparatus will ask who is Michael Faraday? Whoever has read the records of experimental researches in chemistry and physics which the press of our day has issued, and whoever investigates the material works of God, will know at least something of the life, labours, and rewards of Professor Faraday.

Science is knowledge—speaking philosophically, a Science is the known truths, facts, or principles relating to any subject, classified, arranged, and set in order. Religion, *as a thing of knowledge*, is the truths which relate to God and to our connexion with Him. Christianity, *as a thing of knowledge*, is the truths which pertain to man's reconciliation to God and reunion with Him. Why should the theologian and preacher fear the science that is not

technically, or conventionally, religious and Christian? I say conventionally religious, because the facts of all true science are in this sense religious that they are the products of the mind and power of God. But why should the religious man or the Christian teacher fear true science? He may well be afraid of false science just as he is afraid, or ought to be afraid, of false religious doctrine and of false theology, but true science should have nothing but attractive charms to his mind, it should be a thing to be desired, not suspected and feared. The various departments of science—physical, mental, moral, and religious—form a perfect whole. They are the distinct rays of separate items of information which make the colourless light of full and complete knowledge. To know God as the First Cause, and to know secondary causes—rather the forces and elements and agents which the First Cause employs—is not to appreciate the primary cause less, but rather to be in a position to recognise it more cordially.

If theological science have for its subject the Infinite and Eternal Worker, and if physical science have for its subject that Supreme Master's works and working, these distinct sciences should never even appear to be different, but should be seen united in one stream of water of life. And why should the master and teacher of science "snort scorn" at religious truth and Christian doctrine? Religious science recognises a personal God—a mind, heart, will, and moral nature of infinite capacity as "above all and in all." Does this unfit me for searching into the "all," or does it rob me of a fragment or atom in the boundless "all" as an object of investigation? Say that there is a large park in some part of our England which I know is rich in all that the geologist and botanist and antiquary value. Say that I proceed to examine these riches. Am I unfitted for my task by having inquired to whom the property belongs, by having made the acquaintance of the owner, and by

calling at the mansion to pay my respects to him? And what if such a property were owned by my father? Should I be likely, because of this fact, to examine it less carefully than if I explored it as a stranger? True science and true religion are in perfect harmony, and the master in science may claim, if he be upright and true, the confidence and respect of the teacher of religion and of the preacher of Christ's Holy Gospel. Have I not sometimes seen religious men and religious leaders intensely shy of men of science, and disgustingly familiar with ignorant and wicked men whose only recommendation to attention is an unmeaning and ill-fitting title—a lion's skin on an ass—or the possession of wealth accumulated by more or less of fraud and falsehood, injustice and wrong!

Almost a quarter of a century has fled since I first listened to the lectures of Professor Faraday, and from that day until now the character and pursuits of the Professor have

been objects of deep interest to my mind and heart, exerting, moreover, a very decided influence on my mental life.

We all know that all men are mortal, but there are some men so rich in life, and whose lives have been so wealthy in action and in result that we cannot anticipate their death. Thus has it been with my non-expectation of our great philosopher's death. But Michael Faraday, "having served his generation, by the will of God fell asleep" on the 25th day of the past month, "and was laid unto his fathers."

The events and facts of Professor Faraday's private life and history, unlike his labours and researches, are soon told. He was born at Newington Butts, September 22nd, 1791. His father was a blacksmith. Some call this "humble" or "low" origin. Why is it "low?" A smith may be a "low" man, and so may a bishop, or a prince, or a king. But does labour render a man low?—is a man low because he works? Is a man low because he

works the work which tasks the body as well as the mind? Is an artificer low because he works in brass and iron? Is the father of a family low because instead of bringing up his children on a dead man's earnings, or hoardings, or extortions, or thievings, or testamentary inheritance, he by his own industry provides for his household? Jesus Christ never spake of Himself as lowly in origin because He was the son of a carpenter. The Pharisees said, "Is not this Joseph the carpenter's son?" And without doubt the Pharisees of clan, and caste, and social station will speak and write of Faraday as of "low" origin; but let me say that the womb of an unfashionable, simple, domesticated, home-keeping woman is the studio in which God shapes His divinest forms; and that the home of a working man is the ark in which He has sheltered the infant life of the noblest, and strongest, and wisest of His sons and servants. I do not say this to flatter working men. I

make no such bid for their confidence and favour. Surely of late they have been flattered, and petted, and coaxed, and discussed, and magnified, to the disgust of the many honest hearts and upright minds to be found in the numerous and powerful class to which they belong.

The blacksmith's son was sent to a day-school in the neighbourhood of his home, where he learned reading, writing, and arithmetic; and moreover acquired, it would appear, a large amount of general information. Such a lad as young Faraday would do better, and would gain more at a school of this character than a boy of inferior principles at Eton or Harrow. There is no honour conferred or involved in being sent to a first-class public school. The lad who having been placed in the midst of great educational advantages has missed the benefit, is disgraced, not honoured, by his privileges. An industrious and diligent lad in what is termed "a common

day-school" needs not our pity, because his advantages are not for the present greater. "To him that hath shall more be given."

When but thirteen years of age Michael Faraday was apprenticed to a London book-seller and binder—this trade having been chosen on account of the young apprentice's fondness for books. I have sometimes imagined that the contents of books pass by some mysterious process into the minds of the publishers, and vendors, and binders. All the men in these several callings, with whom I have had to do, have been marked by extended and varied information without being voracious readers. It will suffice to say that the occupation to which Faraday was apprenticed cherished his delight in reading, and gave an opportunity of great breadth for intermeddling with all knowledge. Among the many books which came into his hands were certain scientific treatises. These awakened a spirit of inquiry into the

mysteries and phenomena of the material creation, and led, moreover, to actual research. The construction of an electrifying machine, first of all with a glass phial and subsequently with a cylinder, brought Faraday face to face with that "force" whose phenomena were to be the chief field of his patient, continuous, and successful research.

The next steps in the life of the young philosopher shall be presented in his own words. Writing to Dr. Paris, in 1829, Professor Faraday states:—

"When I was a bookseller's apprentice I was very fond of experiments, and averse to trade. It happened that a gentleman, a member of the Royal Institution, took me to hear some of Sir H. Davy's last lectures in Albemarle-street. I took notes, and afterwards wrote them out more fairly in a quarto volume. My desire to escape from trade, which I thought vicious and selfish, and to enter into the service of science, which I

imagined made its pursuers amiable and liberal, induced me at last to take the bold and simple step of writing to Sir Humphry Davy, expressing my wishes and a hope that, if an opportunity came in his way, he would favour my views ; at the same time I sent the notes I had taken at his lectures.

“ The answer, which makes all the point of my communication, I send you in the original, requesting you to take great care of it, and to let me have it back, for you may imagine how much I value it.”

The letter is as follows :—

“ *Dec. 24th, 1812.*

“ SIR,—I am far from displeased with the proof you have given me of your confidence, which displays great zeal, power of memory, and attention. I am obliged to go out of town, and shall not be settled in town till the end of January. I will then see you at any time you wish. It would gratify me to be of

any service to you. I wish it may be in my power.

“ I am, sir,

“ Your obedient and humble servant,

(Signed) “ H. DAVY.

“ To Mr. Faraday.”

“ You will observe that this took place at the end of the year 1812, and early in 1813 he requested to see me, and told me of the situation of assistant in the laboratory of the Royal Institution, then vacant. At the same time that he thus gratified my desires as to scientific employment, he still advised me not to give up the prospects I had before me, telling me that science was a harsh mistress, and in a pecuniary point of view but poorly rewarding those who devoted themselves to her service. He smiled at my notions of the superior moral feelings of philosophic men, and said that he would leave me to the experience of a few years to set me right on that matter. Finally,

through his good offices, I went to the Royal Institution early in March of 1813, as assistant in the laboratory ; and in October of the same year went with him abroad as his assistant in experiments and writing. I returned with him in April, 1815 ; resumed my station in the Royal Institution ; and have, as you know, ever since remained there."

This is not the occasion on which it would be desirable to trace the professional progress of the philosopher from the day on which he became an assistant in the laboratory of the Royal Institution, to his last appearance as a lecturer some five years ago. His communications to scientific journals date from 1815, his discoveries from 1820, his lectures from 1829 ; and in 1831 Faraday commenced that series of experimental researches in electricity which led to the renowned discoveries constituting his scientific crown. Where is the life in which we shall find more work, and more work finished ? Where is the mind equally

gifted with patience and power—with caution and courage? Where is the labour which success has more gloriously crowned? Where is the life in which philosophy and piety are more sweetly and sincerely united?

Upon a few of many bright points in the life of Michael Faraday I desire to fix the eyes of my audience, and especially of the young men. The first to which I shall direct attention is—

1. His diligent and conscientious use of present advantages, whether many or few, whether great or small. The school in which the boy Faraday was placed did not offer or promise instruction in the higher departments of learning; but instead of neglecting and despising the education it afforded, and wasting his strength in murmuring and envy, he learned all that was taught there. Access was not given him then to large libraries, nor could he call many books his own; but all that came in his way, or that he could pick up, he care-

fully read. His apprenticeship extended his means of reading, and his actual reading was expanded as far as his means. While assistant to Davy and Wollaston, and others, he was busy in conducting their researches; but he had some time left for inquiries of his own, and that, though short, was entirely occupied by independent investigation. And when, in course of years, he was launched on the broad sea of unlimited means and opportunity, he never without good reason cast anchor or furled his sails, or took down a yard of canvas; but using every breath of wind, he sailed from port to port and from haven to haven, increasing the precious freight of the vessel as he held on his way. The day of small things paralyzes some men, and the day of great things palsies other men. Some do nothing because they can do only a little, and others do little through a senseless satisfaction in the possession of the means of doing much. Faraday's life illustrates the words of the Saviour

—“He that is faithful in that which is least, is faithful also in much.”

2. Very early Faraday manifested a sincere desire to live a life of godliness—a life of pure and undefiled religion. The reason which, while yet in his teens, he gave for desiring to change his occupation, is very remarkable. Referring to his youthful days, he writes, as you have heard—“My desire to escape from trade, which I thought vicious and selfish, and to enter into the service of science, which I imagined made its pursuers amiable and liberal . . .” We need not discuss the fact whether trade is in all cases vicious and selfish, and whether the devotees of science are always amiable and liberal. It is enough for our present purpose to know that the youthful Faraday thought that he should have less temptation to ungodliness as a philosopher than as a tradesman, and he desired greatly on this account to change his occupation. Here was hunger for righteousness, and thirst. “Blessed are they

which hunger and thirst after righteousness, for they shall be filled." Without doubt temptation is as real in Albemarle-street as in Blandford-street—as real where Humphry Davy carried on his researches as where Mr. Riebau sold and bound books; but the desire to be where he could lead a godly, righteous, and sober life shows that his young heart, like that of the youthful Josiah, was "tender," and "right in the sight of the Lord."

3. Supreme satisfaction in established truth was a charming feature of Michael Faraday from his youth to his old age. In his lecture on "Mental Education" (in which he shows much of his inner life), there is a passage which far more than justifies this remark.

"The *inclination* we exhibit in respect of any report or opinion that harmonizes with our preconceived notions, can only be compared in degree with the *incredulity* we entertain towards everything that opposes them; and these opposite and apparently incompatible, or at least

inconsistent, conditions are accepted simultaneously in the most extraordinary manner. At one moment a departure from the laws of nature is admitted without the pretence of a careful examination of the proof; and at the next the whole force of these laws, acting un-deviatingly through all time, is denied, because the testimony they give is disliked.

“It is my firm persuasion that no man can examine himself in the most common things, having any reference to him personally, or to any person, thought, or matter related to him, without being soon made aware of *the temptation*, and the difficulty of opposing it. I could give you many illustrations, personal to myself, about atmospheric magnetism, lines of force, attraction, repulsion, unity of power, nature of matter, &c.; or in things more general to our common nature, about likes and dislikes, wishes, hopes, and fears; but it would be unsuitable and also unnecessary, for each must be conscious of a large field sadly uncultivated in

this respect. *I will simply express my strong belief, that that point of self-education which consists in teaching the mind to resist its desires and inclinations, until they are proved to be right, is the most important of all, not only in things of natural philosophy, but in every department of daily life."*

Hypothesis with Faraday was not a substitute for that which has been proved, but a ladder by which he climbed to sound conclusions. Theory to him was only a clue which he used diligently to discover truth. A more wise and cautious use of theory was never made by any man. That which was doubtful was never placed among the treasures of his knowledge. The false he flung away with a firm hand and a mighty arm and a true heart ; but the unproved was never placed in his casket of precious things, or put in his purse for purposes of currency. For the things that "are true"—true about himself and everybody with whom he had to do—true concerning that ma-

terial world which he lived to interpret—true about his Saviour and God—he strove, laboured, and lived. And when he had found them he never gave them up. Others might share them, but he guarded them, vigilantly and devoutly as sacred things, in the sanctuary of his work and in the temple of his life. No bribe or bait, however tempting, could have moved Faraday to disown a truth or to adopt and endorse an error.

4. The humility and modesty of the departed philosopher were as remarkable as his attainments and powers. He did not even appear to think of himself more highly than he ought to think. He did not over-estimate his labours and their results. His truthfulness prevented his thinking of himself and speaking of himself as though he had done nothing; but his estimate of himself and of his labours was far below that which others had formed of them. And this explains his unobtrusiveness. Inferior men with their

loud voices, and noisy tread, and fussy presence immodestly intrude themselves on others. A small man, big in his own opinion, thrusts himself on everybody when nobody desires to recognise him. In the presence of a great and modest man you are conscious of a light and warmth which surround you noiselessly, and which are more than welcomed by the finest and noblest sensibilities of your nature. In Faraday's humility and modesty we find the cause of his manly independence of human honour. The men who think much of themselves crave the distinctions which man can confer, form a distinct estimate of what is due to themselves, are soured by disappointment, and are childishly excited by attainment. Kings, and princes, and scholars, and statesmen, and philosophers delighted to honour Faraday ; but he wore his honours as though he were the least of all the disciples in the school of science, and seemed as unconscious of them as a child who having

adorned itself with its mother's jewels is unaware of the costliness of its ornaments.

5. The patience of our philosopher is something wonderful. He could cry after knowledge, and lift up his voice for understanding. He could seek her as silver, and search for her as hid treasure. And he could ask and *wait*—seek and *wait*—knock and *wait*—cry loudly and earnestly, and yet *wait*. Patience is a mighty power to a great soul. It is a crowning virtue in a noble life. By short, and cautious, and sure steps Faraday advanced toward all his discoveries. He did not covet wings that he might make haste—he was content to move forward on his feet—and with these never recklessly striding or breathlessly running, but moving step by step onward and yet onward. The memoirs of his experiments are illustration and proof of all this. In his paper on the “Limits of Vaporization,” he speaks of the great length of time required for the necessary experi-

ments, and he observes,—“Four years have elapsed during which the effects, *if any*, have been accumulating.” This shows how he could wait for a comparatively small result. But what shall we say of his patience in the investigation which led to the discovery of magneto-electricity, a patience rewarded first by a tiny spark, and now by the most powerful artificial light! He who would work continuously, hopefully and successfully, must learn with patience to wait.

As we look upon the life before us, the bright points present themselves like the stars which one after another reveal their presence in the evening sky. There was an attractive sweetness in Faraday, and a winning simplicity which none who knew him could fail to see and appreciate. There was also the complete culture of all his powers. These features we only name. Some others we must leave unnoticed. But there are two which we cannot pass by. These are his joy in know-

ing and in teaching, and his personal Christianity.

6. Sure and certain knowledge acquired was to Faraday better than the merchandize of silver, and the gain thereof than fine gold. More precious was it to him than rubies. All other things he desired were not comparable to it. Equally precious to him and valued by him were his opportunities of imparting knowledge. Give to him a listening ear, or an attentive eye, rather a listening ear *and* an attentive eye, and teaching—communicating—was a luxury in which his soul delighted.

7. But we hasten to remark finally that Michael Faraday lived the life of a true Christian while engaged in the pursuits of an experimental philosopher. His views of Divine revelation are expressed in the following words:—

“High as man is placed above the creatures around him, there is a higher and far more exalted position within his view; and the

ways are infinite in which he occupies his thoughts about the fears, or hopes, or expectations of a future life. I believe that the truth of that future cannot be brought to his knowledge by any exertion of his mental powers, however exalted they may be; that it is made known to him by other teaching than his own, and is received through simple belief of the testimony given. Let no one suppose for a moment that the self-education I am about to commend in respect of the things of this life, extends to any considerations of the hope set before us, as if man by reasoning could find out God. It would be improper here to enter upon this subject further than to claim an absolute distinction between religious and ordinary belief. I shall be reproached with the weakness of refusing to apply those mental operations which I think good in respect of high things to the very highest. I am content to bear the reproach. Yet, even in earthly matters, I

believe that the invisible things of Him from the creation of the world are clearly seen, being understood by the things that are made, even His eternal power and Godhead; and I have never seen anything incompatible between those things of man which can be known by the spirit of man which is within him, and those higher things concerning his future, which he cannot know by that spirit."

By birth and education he was a member of the sect or church known as Sandemanians or Glassites. Among the characteristic religious belief of this church is the doctrine that faith is a passive grace for which the believer is in no sense responsible, it being, without the consent of the human spirit, planted in the heart by the Holy Ghost. Among the distinctive practices of this sect is the keeping silence on religious subjects to those who are not Christians, the spending and giving away of their whole income, and the pursuit of some secular occupation by their pastors or elders. In this

church Faraday was not only a member but an elder ; ministering on the Sunday morning and on Wednesday evening by the reading and exposition of the Scriptures, and by conducting worship, to a congregation assembling for many years in Goswell-street, City, and more recently in Barnsbury. There appears to me to be something in Faraday's constitution which accounts for his attachment to this sect, and also much which kept him free from not only the baneful effects of false doctrine, but from what appears to an outsider to be useless strictness and rigidity and dangerous narrowness. Some men are below their creed. Faraday was above his peculiar religious belief. Some men are worse than their creed, but Faraday was superior. He was not a fatalist. He did not limit the love and goodness of God. And he spoke by his spirit and life on religious subjects although his lips kept silence. Unbelief and irreligion in other men pained him. Faith and godliness gave him joy. But it is

enough for us to know that he believed in one God the Father Almighty, maker of heaven and earth ; and in one Lord Jesus Christ, the only-begotten Son of God ; and in the Holy Ghost, the Lord and giver of life ; and that his character was moulded and his conduct guided by the best portions of his religious belief. It is enough for us to know that he had a firm and devout faith in what we all acknowledge to be pure Christianity, and that his faith was not dead because without works, but alive in benevolent service to man, and in a quiet walking with God. Some will remember his expressive reading of Holy Scripture—his expositions of the sacred writings and his fervent prayers and praises ; but multitudes who never even heard of the church to which he belonged, or of his religious ministrations, will cherish the recollection of his holy life.

So far as earth and time are concerned that holy life is now a memory, for on the last Sabbath of the month just past he peacefully

died – died to live again where the light of every science is coloured and strengthened by that knowledge of God in which is eternal life.

If any ask why in this place, on this day, and in this service, we present for contemplation the life of a philosopher—our answer must be found in all that this man was and in all that he did. If small reasons might be mentioned—small because personal to the preacher—they may be found in the effect which a lecture by Faraday, whether heard or read, has always produced on the preacher's mind; strengthening it for the consideration of religious subjects, and making the resolution yet more firm to know and speak nothing but the things we may be assured of, nothing but the truth. This agrees with a statement in a review of Faraday's "Experimental Researches in Electricity," in the *Philosophical Magazine* for October, 1855. "The value of Faraday's discoveries consists in a great degree in the amount of

intellectual power which they call into action." If the weightiest reasons be given, they are the importance of recognising the relation of science to revealed religion, and the great value of the testimony which a Christian philosopher bears to the truth of the doctrine that true science and true religion are not at variance, but divinely one.

I am conscious of the imperfection of this tribute of reverence for the life and labours of one of the greatest men of our age. The garland I place on his tomb is composed of wild and modest and common flowers bound together by an unartistic hand. The unguent with which I anoint his body is not spikenard very costly, but only such as the poor can obtain. Our "Well done!" is a faint and timid whisper, and not the shout of his companions in science. Our discussion of his life and labours is in some respects like a child handling gems whose worth exceeds its power of appreciation. But our tribute is sincere and

entirely spontaneous—the offering of a free and loving heart.

May the discoveries of Michael Faraday long continue to relieve suffering, to supply want, to aid manufactures and agriculture, and to tempt into the inner sanctuaries of the temple of the material world many who are now without the gate or only in the outer court! May the institution which fostered this son of science be blessed by many such children, and be kept true to her mission as a nursing mother! May Faraday's successors be men of like mind and spirit, and may the holy life of Faraday attract many students of science away from a fashionable scepticism into the paths of true religion and of Christian faith. May his discoveries, to use the eloquent words of we believe Dr. Tyndall, be "golden lodes at which the highest scientific spirits of the present age may work, and at which thousands to come may work with incalculable benefit to mankind."

Michael Faraday is dead to us and to this world, but he is living still. Already clothed it may be with another body he is thirsting for knowledge, even now and still acquiring. Delivered from the burden of the flesh, and purified from all spiritual evil, he may already have set out for a new goal. Old companions in science and religion he has met again. The authors of the Sacred Writings are now, with all the prophets and apostles, his personal acquaintance. The Saviour, whom not having seen he loved, he now sees, and loves more ardently for the beatific vision. The student of the works of God is with God. The stream enchanted him ; what then must be the effect of dwelling near the fountain—the fountain of all facts, material and spiritual—the fountain of all force, material and spiritual—the fountain of all being, material and spiritual—the fountain of all light and love and life—the sun which rules the eternal day of being ! “Blessed are the pure in heart, for they shall see God.”

During the closing years of life, a cloud of bodily infirmity overshadowed Michael Faraday. It was cloud before sunset. Yet one who was ever near him wrote a year ago, "It is, indeed, a great source of happiness to see him so peaceful and trusting; he is quite like a little child." The cloud was light compared with the events of his life's long and laborious day. And it did not continue. The motion of the wings of the Angel of Death broke it, and when the gates of Paradise were opened to receive our leader in the knowledge of God's most glorious works, the golden light which streamed through those gates scattered all cloud for ever and ever.

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